

REMARKS/ARGUMENTS

Pending Claims

Claims 1-6 are pending in this application. Claim 1 has been amended. No new matter has been added.

Claim Rejections under 35 U.S.C. §102 and §103

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by Imai et al., U.S. Patent No. 5,870,467; and claims 2-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Imai et al., U.S. Patent No. 5,870,467 in view of Umebayashi et al., U.S. Patent Publication No. 2004/0010707 A1. Applicants have amended claims 1 -3 and request reconsideration of the rejections in view of the amendments and for the following reasons.

According to the present invention, a program identifier is assigned to programs in order to execute access control to a storage apparatus for each program. The program identifier is delivered to the storage apparatus or the network apparatus along with an IO command issued by the program. On the basis of the program identifier, the storage apparatus or the network apparatus determines whether or not execution of the IO command received along with the program identifier is allowed. Further, by the present invention, the program identifier is able to be delivered to the storage apparatus or the network apparatus without changing a protocol of communication between the computer and the storage apparatus or the network apparatus by embedding the program identifier in a special value included in the IO command or an IO request made to generate the IO command.

In particular, in the present invention, an original address included in an I/O request and a program identifier are used as inputs of a function $f(x, y)$ to generate a new address, which is different from the original address, and an appended program identifier. That is, the function $f(x, y)$ is a function inputting two values x and y to generate one value, i.e., a new address value including an appended program identifier. In this case, x and y represent the program identifier and the original address included in the I/O request. See page 10, lines 12-15 of the specification. In addition, an inverse function $g(z)$ is also used as a function inversed to the function $f(x, y)$. That is, the inverse function $g(z)$ is a function inputting 1 value " z ", i.e., the new address to obtain two values, i.e., the original address and the original program identifier. See page 13, lines 11-13 of the specification. In this way, a program identifier can be supplied to the storage apparatus or the network apparatus without changing the protocol of communication between the computer and the storage apparatus or the network apparatus.

Following the generation of the original address and program identifier by the second function, at the next step, e.g. step 403 in Fig. 4, a network-address table 308 is searched for a network address (second address in claims 5 and 6) associated with the generated program identifier and a logical-volume identifier represented by the original address. Further, as set forth in claim 4, the storage apparatus determines whether or not an access to a logical volume existing in the storage apparatus can be made, for example by use of a determination unit, as shown in Fig. 3, for example.

Imai et al. do not disclose the features of this invention, and in particular do not show the first function of the invention, as set forth in claim 1, and further do not show the

combination of the first and second functions of the invention as set forth in claims 2-4.

Further, Imai et al. do not disclose the second function as set forth in claims 5 and 6 of the present invention. Applicants have amended claim 1, as well as claims 2 and 3, to clarify the first function in that the claims now require that the one value that is generated by the first function from the two input values, i.e., the program identifier and the request address, is used as a new address, and the new address is different from the request address. In this manner, the IO request is issued using the new address.

As set forth in the record by Applicants, Imai discloses a data input/output management scheme for managing data input according to an input request from a program and data output according to an output request from a program, to protect electronic (written) data from unauthorized duplication. Imai finds application in the protection of written data that is protected by a copyright, for example. According to Imai et al., the apparatus has a protected data input recording unit which records program identifiers, and if the ID of a requesting program is recorded in the protected data input recording unit, data requested from the requesting program is output in accordance with the result of authentication. In particular, Imai discloses a mechanism for outputting data only by a permitted program, referring to recorded program identifiers.

Imai's output permission judgment means (5) receives an address set in a data input/output request (a request address) and the identifier for identifying the program (program identifier); and an address set in a data input/output request that is generated permits data access by the output permission judgment means, which the Office Action compares to the

claimed new address. However, the output permission judgment means of Imai, which is compared to the claimed first function, and deals with only cases of an output request, as in “when the data input/output request received by the request reception means is a data output request”, does not correspond to the claimed first function,

Further, according to Imai, an address set in a data input/output request (comparable to a request address) is the same as the address set in a data input/output request that permits data access by output permission judgment means, which is compared to the claimed new address with the program identifier appended, according to the rejection. However, the claims have been amended to clarify that the claimed new address is different from an original request address. Accordingly, reconsideration and withdrawal of the 35 USC §102 rejection of claim 1 is respectfully requested. Further, for the same reasons, reconsideration of the rejection of claims 2-4 is respectfully requested. That is, Imai does not teach or suggest the combination of the first and second functions set forth in claims 2-4, nor the second function of the invention as set forth in claims 5 and 6.

Umebayashi is relied upon for disclosing a data protection program that is able to effectively restrict an unauthorized access to a resource to be protected even when the resource to be protected is in a state legitimately accessed by a user. According to Umebayashi, the data protection program determines whether data access is permitted or not from a program by using an access permission management table which has columns of program information and encryption keys. Umebayashi teaches a mechanism for restricting data access in accordance with the judging result by the access permission management table. However, Umebayashi

does not teach or suggest the claimed second function for carrying out an operation to input one value for generation of two output values as an operation inverse to that of the first function, that is to generate an original request address and a program identifier as the two output values from an address specified in the IO request as the new address. Further, in the present invention, a table associating a program identifier, a logical volume existing in the storage apparatus and a network address with each other is searched for a network address associated with the generated program identifier and a logical volume indicated by the generated original request address and a communication with the storage apparatus is carried out by using the network address as an address of a transmission originator in order to issue an IO command to the original request address. See claims 2-3 of the present invention.

In Umebayashi, the network address is used as an address of a transmission originator in order to issue an IO command to said original request address. See the 4th embodiment of Umebayashi and Fig. 10 as the example of "a network-address conversion method". As apparent from the foregoing discussion, the combination of Imai and Umebayashi does not render the invention of claims 2-6 unpatentable under 35 U.S.C. § 103(a), and therefore the rejection should be withdrawn.

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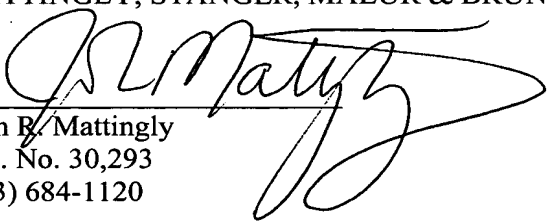
Docket No. NIT-407

CONCLUSION

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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